LISTING OF CLAIMS

The following listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A fixed length data search device, comprising:

a hash operation means for operating and outputting a hash value of an inputted fixed length datum,

a data table memory consisting of N numbers of memory banks, where N is an integer greater than or equal to 2, the data table memory capable of storing a data table holding a large number of fixed length data,

a pointer table memory for storing a memory pointer table having a memory address at which each fixed length datum is stored with said hash value as an index, and

a comparison means for simultaneously comparing a plurality of fixed length data stored at the same memory address in said N numbers of memory banks, the comparison means for outputting results of the comparison.

2. (Original) The fixed length data search device according to claim 1, wherein said comparison means comprises N numbers of comparators for determining if two fixed length data are identical, the device referring to said memory pointer table based on a resulting memory address, said comparison means determining if any of the fixed length data stored at the same memory address in said N numbers of memory banks matches the single fixed length datum inputted to

said hash operation means, said comparison means outputting the result of the determination.

3. (Original) The fixed length data search device according to claim 1, wherein an datum identical to the single fixed length datum inputted to said hash operation means is searched in said data table through said hash operation means, said single fixed length datum registered in said data table if the datum has not been previously registered with said data table.

4. (Original) The fixed length data search device according to claim 3, wherein each of a plurality of fixed length data having the same hash value are stored at the same memory address of a different memory bank in said data table memory.

5. (Original) The fixed length data search device according to claim 3, wherein each of a plurality of fixed length data having a different hash value are stored at the same memory address of a different memory bank in said data table memory.

6. (Original) The fixed length data search device according to claim 1, wherein said fixed length data is a MAC (Media Access Control) address for network communications, and said data table memory is a MAC entry table memory for storing a MAC address table holding a large number of MAC addresses.

7. (Original) A fixed length data search device, comprising:

a hash operation means, said hash operation means using two types of hash functions to determine a first and second hash values of an inputted fixed length datum;

a data table memory consisting of N numbers of memory banks, where N is an integer that is greater than or equal to 2, the data table memory for storing a data table holding a large number of fixed length data

a pointer table memory for storing a first memory pointer table, said pointer table memory having a memory address at which each fixed length datum is stored, wherein said first hash value is an index, and a second memory pointer table holding the memory address at which each fixed length datum is stored, said second hash value as an index; and

a comparison means for simultaneously comparing a plurality of fixed length data stored at the same memory address in said N numbers of memory banks, the comparison means for outputting results of the comparison.

8. (Original) The fixed length data search device according to claim 7, further comprising a pointer selector table using said first hash value as an index to indicate which one of said first and second memory pointer tables should be referred to when a fixed length datum is inputted.

9. (Original) The fixed length data search device according to claim 8, wherein when the number of stored data of separate fixed length data having the same first hash value exceeds N, a pointer in said pointer selector table corresponding to the first hash value of an unstored fixed length datum stored is set to said second memory pointer table, said memory address at which the datum is stored managed with said second memory pointer table.

10. (Original) The fixed length data search device according to claim 9, wherein said comparison means comprises N numbers of comparators, said comparators simultaneously compare all bits

to determine whether or not two fixed length data are identical.

11. (Original) The fixed length data search device according to claim 9, wherein said comparison means determines if any of the fixed length data stored at the same memory address in said N numbers of memory banks matches the single fixed length datum inputted to said hash operation means and outputs the result of the determination.

12. (Original) The fixed length data search device according to claim 9, wherein if another fixed length datum having the same first hash value as an inputted fixed length datum has not been registered with said data table, said inputted fixed length datum is stored in said data table memory, and said memory address at which the datum is stored is managed with said main memory pointer table.

13. (Original) The fixed length data search device according to claim 7, wherein said fixed length data is a MAC (Media Access Control) address for network communications, and said data table memory is a MAC entry table memory for storing a MAC address table holding a large number of MAC addresses.

14. (Original) A method of searching fixed length data, comprising the steps of:

performing hash operation said hash operation outputting a hash value of inputted fixed length data;

referring to a memory pointer table holding a memory address at which each fixed length datum is stored with said hash value as an index;

reading N numbers of fixed length data stored at an address pointed to by a pointer in said memory pointer table from a data table stored in a data table memory consisting of N numbers of memory banks, where N is an integer that is greater than or equal to 2, the data table capable of storing a large number of fixed length data, and

simultaneously comparing said read N numbers of fixed length data with said inputted single fixed length datum, and outputting results of the comparison.

15. (Original) The method of searching fixed length data according to claim 14, wherein said step of comparing comprises simultaneously comparing said read N numbers of fixed length data using parallel processing, said comparing determining if two fixed length data are identical.

16. (Original) The method of searching fixed length data according to claim 15, wherein said comparing comprises the steps of: searching an identical datum to said inputted single fixed length datum in said data table based on its hash value, and registering said inputted single fixed length datum in said data table if said identical datum has not been detected in said step of searching.

17. (Original) The method of searching fixed length data according to claim 16, wherein each of separate fixed length data having the same hash value is registered with the same memory address of a different memory bank in said data table memory during said registering.

18. (Original) The method of searching fixed length data according to claim 17, wherein each of

a plurality of fixed length data having a different hash value is registered with the same memory address of a different memory bank in said data table memory.